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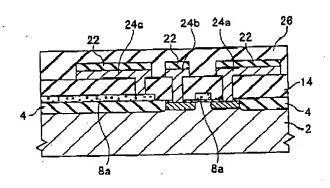
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SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE (54)Title:

半導体装置及び半導体装置の製造方法 (54)発明の名称



A method of manufacturing a semiconductor device baving a control electrode is provided in which the control electrode is metalized while reducing the damage and deterioration of gate oxide on the control electrode. In this method, a metal interconnect (24) in predetermined patterns is formed so that it can be electrically connected to a control electrode (8a) on an insulating layer (10) formed on a substrate (2). The method comprises the steps of forming metal film; forming a hard mask (22) of silicon-base inorganic insulator on the metal film, the hard mask being 150 nm to 300 nm thick and having a predetermined pattern; and exching the metal film with an exching gas using the hard mask (22) to form a metal interconnect (24) in a predetermined pattern. According to the method, the remaining charge on the metal film is reduced, thus preventing the damage and deterioration of the insulation layer due to the charge flowing into the control electrode. More preferably, the thickness of the hard mask (22) is from 180 nm to 230 nm.

## INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER INC.CL7 HO1L21/3213, H01L21/3065, H01L21/336, H01L29/78				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols)  Int.Cl <sup>7</sup> H01L21/3213, H01L21/3065, H01L21/336, H01L29/78				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2000 Kokai Jitsuyo Shinan Koho 1971-2000 Jitsuyo Shinan Toroku Koho 1996-2000				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
C. DOCUI	MENTS CONSIDERED TO BE RELEVANT		·	
Category*	Citation of document, with indication, where ap	propriate, of the relevant passages	Relevant to claim No.	
	JP, 7-78829, A (Fujitsu Limited	1),		
x	20 March, 1995 (20.03.95), Par. Nos. [0129]-[0135]; Fig. 1 Par. Nos. [0094] to [0105]; Fig		1-7, 10-20	
¥	Par. Nos. [0176] to [0182] Par. Nos. [0129]-[0135]; Fig. I Par. Nos. [0094] to [0105]; Fig.		ê, <u>9</u>	
	Par. Nos. [0176] to [0182] (Family: none)			
Y .	<pre>JP, 11-121615, A (Sony Corporation), 30 April, 1999 (30.04.99), Far. Nos. [0027]-[0054]; Fig. 1 (Family: none)</pre>		4, 8, 9	
Further documents are listed in the continuation of Box C. See patent family annex.				
"A" document defining the general state of the art which is not		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory understand the principle or theory understand		
"E' earlier document but published on or after the international filing "X" document of particular relevance; the claimed			laimed invention cannot be	
date  "L"  document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  "O"  document referring to an oral disclosure, use, exhibition or other		considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such		
				means
	netual completion of the international search ruly, 2000 (26.07.00)	Date of mailing of the international sear 08 August, 2000 (08.	ate of mailing of the international search report 08 August, 2000 (08.08.00)	
		Authorized officer		
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